

PUB-NO: **WO008202955A1**

DOCUMENT-IDENTIFIER: **WO 8202955 A1**

TITLE: **IMPROVED DIFFRACTION GRATING SCANNER
CORRECTION OF SCAN CURVATURES**

----- KWIC -----

Abstract Text - FPAR (1):

CHG DATE=19990617 STATUS=0> An improved diffraction grating imaging techniques are utilized to correct the curvature of the scan, in the plane of the scan, as well as correction for field curvature to provide improved resolution and increased length of scan. The scanner system may comprise either refractive or reflective elements, cylindrical lenses (13, 15, 36, 38) and reflectors (27, 33, 37, 39) or elliptical cross-section and toroidal reflectors (20) and lenses. In addition, such system will customarily include one or more scanning elements, but at least one cylindrical or toroidal element must be present. The anamorphic imaging correction apparatus can be utilized with scanners, including polygonal and single-mirror scanners, as well as other types.

Details Text Image HTML KWIC

109	EP 553729 A1	
110	FR 2556484 A1	
111	WO 8202955 A1	
112	EP 772156 A	

Documentation Searched other than Minimum Documentation to the Extent that such Documents are Included in the Fields Searched

KWS CONSIDERED TO BE RELEVANT¹⁴

Citation of Document, 18 with indication, where appropriate, of the relevant passages¹⁵ R

P, A, 55-135813, Published 23 October 1980

P, A, 55-157717, Published 08 December 1980

S, A, 4,294,506, Published 13 October 1981

S, A, 3,870,394, Published 11 March 1975

S, A, 3,750,189, Published 31 July 1973

N, IBM Journal of R and D, Vol. 21, No. 5, 1977, U.S.A., J.M. Fleischer et al, "Laser-Optical System of the IBM 3800 Printer," see pages 479-482

S, A, 4,274,703, Published 23 June 1981

14. Indication of cited documents; 15. defining the general state of the art document but published on or after the international application date and on or before the priority date claimed.

"P" document published prior to the international application date and on or after the priority date claimed.

DERWENT-ACC-NO: 1994-345882

DERWENT-WEEK: 199443

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TITLE: High resolution camera having reduced power consumption
corresp.to HDTV standard - has anamorphic lens imaging
light from object, which is supplied through R, G and B
CCDs of which outputs are combined in dichroic prism, and
changes pixel ratio by adjusting anamorphic lens
NoAbstract

----- KWIC -----

Derwent Accession Number - NRAN (1):

1994-345882

Title - TIX (1):

High resolution camera having reduced power consumption corresp.to HDTV

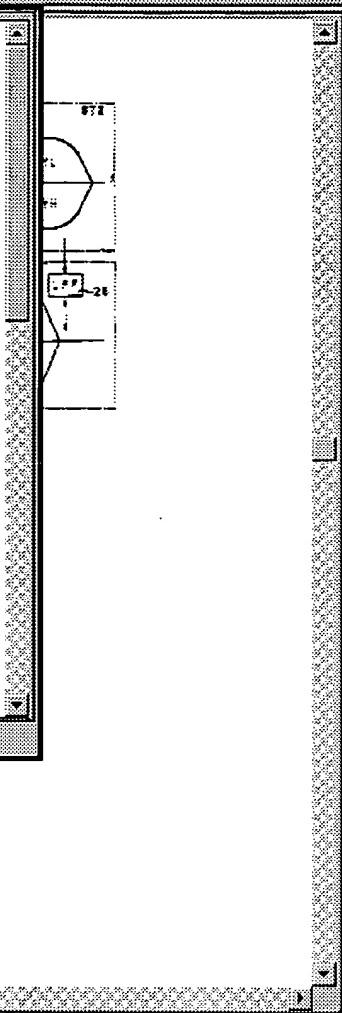
Details Text Image HTML KWIC

116 US 5414458 A

117 IL 94135 A

118 JP 06268900 A

119 JP 06253242 A



PAT-NO: **JP360114850A**

DOCUMENT-IDENTIFIER: **JP 60114850 A**

TITLE: **ANAMORPHIC VARIABLE POWER COPYING METHOD**

----- KWIC -----

Abstract Text - FPAR (1):

PURPOSE: To attain anamorphic variable power without reducing resolution by arranging a prism having no refractive power in one axial direction out of two axes rectangular to the axis of projected light and having refractive power in the other axial direction close to a projection lens in the projected light path and executing copying with different magnification values in the slit longitudinal direction and in the slit width direction respectively.

Document Identifier - DID (1):

JP 60114850 A

Details Text Image HTML KWIC

105 JP 61156038 A

106 JP 60114850 A

107 JP 60114845 A

108 EP 748694 A2

PAT-NO: **JP360114845A**

DOCUMENT-IDENTIFIER: **JP 60114845 A**

TITLE: **ANAMORPHIC VARIABLE POWER COPYING METHOD**

----- KWIC -----

Abstract Text - FPAR (1):

PURPOSE: To execute anamorphic variable magnification without reducing its resolution by setting up the speed ratio of a scanning system to a photosensitive body and the position of a projection lens so that the magnification in a slit longitudinal direction is different from that in a slit width direction.

Document Identifier - DID (1):

JP 60114845 A

			KWIC
105	JP 61156038 A		
106	JP 60114850 A		
107	JP 60114845 A		
108	EP 748694 A2		

glass plate 62. The laser diode assembly produces an optically fanned light plane using optics of the type described in U.S. Pat. No. 4,645,348. Positioned within cabinet 52 adjacent the imaging window is a base leg mirror 64. The mirror is positioned so that light entering through the imaging window enters an anamorphic lens 66. The anamorphic lens has a first focal length along one axis and a different focal length along a second orthogonal axis. The anamorphic lens thus produces expanded resolution in one plane and compressed resolution in another plane. This gives one magnification along the axis orthogonal to the length of the contour line and different magnification along the axis parallel to the length of the contour line. By positioning the anamorphic lens properly, the plane of greater focal length and thus higher magnification is aligned generally perpendicular to the length of the imaged contour line. Positioned behind the anamorphic lens is an imaging lens 68 which projects through an interference filter 70 into the video camera assembly 72. Also housed within cabinet 52 are the interface electronics 74 which couple between the video camera assembly and the digital computer equipment yet to be discussed. The above-described optical arrangement provides a suitable field in both the y and z directions, while maintaining sufficient resolution to compensate for the wide variation in vehicle track, wheel size and tire section.

Patent Number: 4,745,469
Date of Patent: May 17, 1988

SEARCH PATENT DOCUMENTS
► WPI: Pat. Rep. of Germany ... 1971/19

OTHER PUBLICATIONS
of the First International Video Conference on
graphics Washington, D.C., Oct. 10-16, 1.
Application of Computer Vision to Vehicle
Tire Test. J. T. O'Conor et al. pp. 123-131.

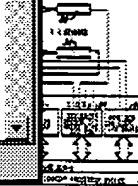
Attorneys—Edward W. Schram

and C. F. H. Heimbold, O'Conor & Parke

ABSTRACT

Improve project fanned or fan-shaped light beam while the wheel is rotated, to obtain fine images from the surface of the tire. The system is provided by video camera positioned at the optical path of the anamorphic lens to obtain in discriminating the specific width of lines. Radially expanded points are selected contour line by an algorithm which effects of various setting on the displayed of the video camera and processing of data is performed by parallel processor system synchronized by sequence dif-

67 Claims, 43 Drawing Sheets



Details Text Image HTML KWIC

82 US 4827436 A

83 US 4820911 A

84 US 4745469 A

85 US 4705401 A

US-PAT-NO: 5528704

DOCUMENT-IDENTIFIER: US 5528704 A

TITLE: Image resolution conversion using a plurality of registrations

----- KWIC -----

Detailed Description Text - DETX (8):

Subsequent to processing input image R.sub.in using prefiltered image R'.sub.in output from prefilter 28 or input image R.sub.in controller 26 elected not to prefilter input image R.sub.in, is pre-resolution converter 30 based on an input and output tile size of conversion controller 26. In the preferred embodiment area map resolution converter 30 to generate appropriate resolution (MxN) image Rout. Although resolution conversion is described herein using mapping, it is understood that other linear combination techniques fraction of each surrounding input pixel to describe an output pixel used, such as nearest neighbor methods as disclosed in U.S. Patent entitled "Unquantized Resolution Conversion of Bitmap Images

	Details	Text	Image	HTML	KWIC
59	US 5579064 A				
60	US 5570232 A				
61	US 5528704 A				
62	US 5491346 A				

U.S. Patent Jun. 16, 1996 Sheet 3 of 9 5,528,704

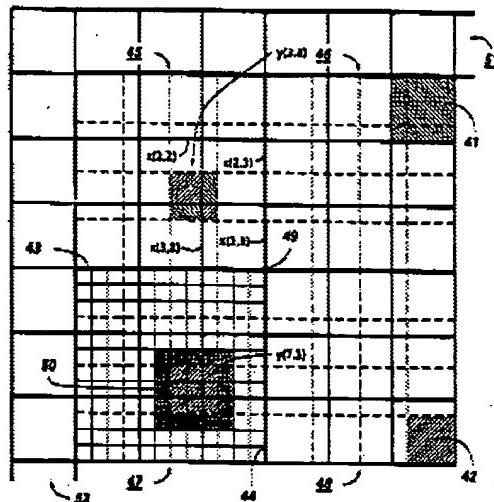


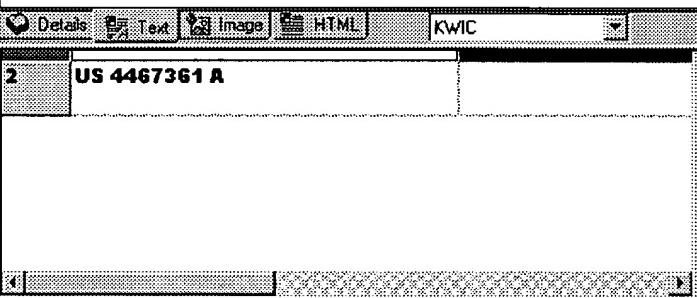
FIG.3

US-PAT-NO: 4554585

DOCUMENT-IDENTIFIER: US 4554585 A

TITLE: Spatial prefilter for variable-resolution sample imaging systems

----- KWIC -----

US Patent No. - PN (1):
4554585United States Patent
CitedPatent Number: 4,554,585
Date of Patent: Nov. 13, 1985INVENTOR: Curtis E. Carlson, Princeton, N.J.
ASSIGNEE: RCA Corporation, Princeton, N.J.Appl. No.: 621,827
Filed: Aug. 12, 1982U.S. CL.: 355/172
Int'l Cl.: H04N 7/26
Field of Search: 156/211, 212, 220, 224,
156/221, 217, 22, 156/228, 156/229, 156/27, 21, 69References Cited
U.S. PATENT DOCUMENTS4,123,222 1/27/78 Ladd .. 156/228
4,123,223 1/27/78 O'Neill .. 156/229Attala, T. et al. .. 156/228
Arlow, J. et al. .. 156/229
Davies, G. et al. .. 156/229Fitzgerald, G. .. 156/229
Fitzgerald, G. .. 156/229
Goldschmidt, G. .. 156/229

Horn, G. .. 156/229

Krause, G. .. 156/229

Lamb, G. .. 1

US-PAT-N0: 5303373

DOCUMENT-IDENTIFIER: US 5303373 A

TITLE: Anamorphic fused fiber optic bundle

----- KWIC -----

Brief Summary Text - BSTX (17):

The anamorphic optical fibers of this invention can be used to conventional imaging devices in the same fashion as prior art has been utilized, with the advantages, of course, attendant to this such as maximization of resolution, achievement of proper magnification, effective use of active areas, etc.

Details Text Image HTML KWIC

69	US 5359423 A	
70	US 5309241 A	
71	US 5303373 A	
72	US 5274489 A	

United States Patent 5303373
Havocian, Jr.

[1] Patent Number 5,303,373
[2] Date of Patent Apr. 12, 1994

[3] ANAMORPHIC FUSED FIBER OPTIC BUNDLE

[4] Inventor Gino Q. Havocian, Jr., Worcester,
Mass.

[5] Assignee Fiber Optic, Inc.,
Worcester, Mass.

[6] Appl. No. 08/039,391
[7] Filed Oct. 14, 1992

[8] Int. Cl. G02B 6/04
[9] U.S. Cl. 351/112, 351/113

[10] Field of Search 351/112, 351/113

[11] Reference Cited

U.S. PATENT DOCUMENTS

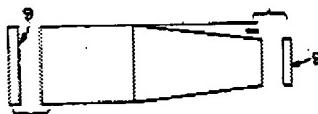
3,301,715 4/1967 Goto et al. 351/112
3,329,123 9/1967 Goto et al. 351/112
3,342,969 9/1967 Nagai et al. 351/112
3,347,935 9/1967 Goto 351/112
3,353,700 10/1967 Goto 351/112
3,362,453 1/1968 Goto 351/112
4,076,873 2/1978 Tsuchiya et al. 351/113
4,091,835 2/1978 Tsuchiya 351/112 X
4,171,846 2/1979 Engard 351/112 A
4,210,024 2/1984 Hattori 351/112

Primary Examiner—John D. Lee
Assistant Examiner—Thomas J. Murphy
Attorney, Agent or Firm—John C. Vella, Ziffman, &
Kreiger

[12] ABSTRACT

An anamorphic, tapered fused fiber optic bundle is provided having a longitudinal axis Z and two ends each having surfaces in a planar XY end/Y and perspective end Z and Y. The XY end has two side faces X and the side Z is at an angle different from the angle Y/X, wherein the X axis direction of side Z is eccentrically wider along side Z and from the value X to said first end to the value X in said second end.

4 Claims, 8 Drawing Sheets



US-PAT-NO: 5491346

DOCUMENT-IDENTIFIER: US 5491346 A

TITLE: Anamorphic lens system for a hand-held symbology reader

----- KWIC -----

Abstract Text - ABTX (1):

A portable symbology reader utilizing an anamorphic lens system. The anamorphic lens system allows a low cost, high volume CCD sensor to be used in a hand-held, point and shoot, portable imaging system. The anamorphic lens system provides vertical sensor resolution equal to the horizontal while providing a maximum field of view.

Brief Summary Text - BSTX (20):

More specifically described, the present invention provides a symbology reader for detecting a coded symbol on an object, the coded symbol requiring at least a first predetermined object resolution along a vertical plane. The reader includes a two-dimensional array CCD sensor, the CCD sensor defining a

2
3. The field capacity here is expressed as width height pixels. A complete set such fields every 16 second. The standard is 16x16.

shows that in a prior art state-of-the-art, a two-dimensional array of pixels is required to provide a vertical resolution for reading symbols. This is done by using a two-dimensional array of pixels. The two-dimensional array of pixels is used to capture the image in both planes, only one half of the signal to be captured when the other is ignored. This was the vertical sensor resolution of the CCD, which is a waste of pixels, making up every other 16x16 pixel.

CCD's have anamorphic sensor resolution, i.e. CCD pixels in the horizontal direction and the vertical direction. Thus, in accordance with a shown, an example resolution for a typical CCD is a 1280 pixels horizontally, for image resolution of 1280x1024 pixels. As shown, the image can be compressed before the dimension of resolution, and the horizontal object size has to be reduced for reading code on codes. In a two-dimensional array, it is to be said, in the horizontal direction, there is a vertical sensor resolution of 1024 pixels vertically, and the horizontal object resolution is 1280 pixels horizontally. The difference between the vertical and horizontal resolution of the sensor makes the object resolution smaller for both the sensor.

image sensor sheet 100 can be used, of course, for the horizontal and vertical fields, for successful decoding. As described above, the center of the sensor is when the reading sensor can be used, and vertical resolution object size is a resolution. When the horizontal object resolution is 1280 pixels, 1024 pixels will be used for the vertical resolution. For this reason, the vertical and horizontal object sizes and horizontal resolution provided by the typical consumer CCD is length from the sensor can be substituted as image sensor resolution of a CCD sensor with resolution of surfaces as varied as 16x16 pixels, 32x32 pixels, 64x64 pixels, 128x128 pixels, etc.

Other fields, 16x16 pixels, 32x32 pixels, 64x64 pixels, 128x128 pixels, 256x256 pixels, 512x512 pixels, 1024x1024 pixels, etc., are also possible, and the size of the object perfectly large. If a consumer reader is allowed sensor resolution and vertical resolution, the horizontal resolution and vertical resolution, the horizontal object resolution is 1280 pixels, and the vertical object resolution is 1024 pixels, and the vertical and horizontal object resolution of 256x256 pixels are also required. Preferably, for a two-dimensional symbology reading, the horizontal object resolution would be equal to the vertical.

The way to decrease the horizontal object size is to use a two-dimensional array of pixels, where the vertical resolution and horizontal resolution are the vertical resolution and horizontal resolution object size. These cameras are very expensive and currently are only available to recognize them. There is a need for an imaging system which can adopt a typical consumer CCD sensor, and uses the vertical resolution object size and sensor for the discrepancies between horizontal and vertical sensor resolution.

SUMMARY OF THE INVENTION

The present invention solves the above problems by providing an anamorphic lens system for use in a hand-held

			KWIC
60	US 5570232 A		
61	US 5528704 A		
62	US 5491346 A		
63	US 5440111 A		

US-PAT-NO: 5579064

DOCUMENT-IDENTIFIER: US 5579064 A

TITLE: Compact anamorphic motion picture system

----- KWIC -----

Claims Text - CLTX (3):

said step of processing includes using an anamorphic lens to vertically compressed anamorphic release print film frame images on release print film, wherein said anamorphic release print film frame images each have a larger aspect ratio than said anamorphic release print film frame images and with said release print film frame images each substantially all areas of said camera images, so the percent of expansion required during projection to project a geometrically of the scene, is reduced, and wherein said release print film has resolution than said originating camera film.

Claims Text - CLTX (11):

Details Text Image HTML KWIC

57 US 5581413 A

58 US 5579445 A

59 US 5579064 A

60 US 5570232 A

United States Patent no.

Patent Number: 5,579,064

Filer

Date of Patent: Nov. 26, 1996

D4 COMPACT ANAMORPHIC MOTION PICTURE SYSTEM

(11) Inventor: Richard Verner, 15337 Camino de la Sierra, Pacific Palisades, Calif. 90275

(21) Appl. No.: 08/237,923

(22) Fldg.: Sep. 14, 1994

Related U.S. Application Data

(16) Continuation-in-part of Ser. No. 221,245, Mar. 21, 1994, which is a continuation-in-part of Ser. No. 07/319,121, Oct. 12, 1990, abandoned.

(17) Int. Cl. G03B 19/12; Octo. 21/01

U.S. Cl. 352/34; 352/35; 352/42

(18) Field of Search 352/34; 352/42

352/35; 352/43

(19) Reference Cited

U.S. PATENT DOCUMENTS

LA10425 1950/51 Camco 352/42

LA10426 1950/51 Camco 352/23

LA10427 1950/51 Camco 352/42

LA10428 1950/51 Camco 352/42

LA10429 1950/51 Camco 352/42

LA10430 1950/51 Camco 352/42

LA10431 1950/51 Camco 352/42

LA10432 1950/51 Camco 352/42

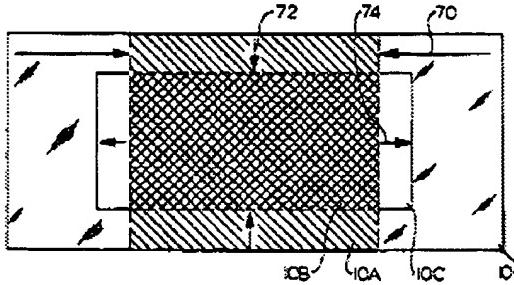
LA10433 1950/51 Camco 352/42

Assistant Examiner—Michael Miller
Artistic Agent or PTO—Patrick Hartender Reiss

ABSTRACT

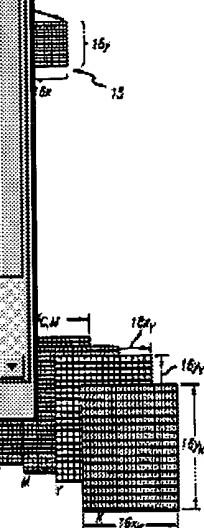
A method is described for producing Cinemascope-type motion picture images that have a large aspect ratio (e.g., 1.83 to 1), which images are high quality projection ready anamorphically projected images, and which images are the intermediate images which relate to said A scene to be projected. The method is used to produce a release print, which is substantially compressed horizontally relative to the original camera images (aspect ratio of 1.33 to 1) of the original scene images. An anamorphic projector is used to expand the horizontal dimension of the release print by about 25% (or an aspect ratio of 1.33 to 1). The first time the anamorphic projector has horizontally expanded the image by about 25%, instead of the 100% of the release print, makes the projection of extremely sharp and high-quality images on a screen using a standard planar anamorphic lens. The fact that the release print images have been vertically compressed by about 25% for each release print for a longer lifetime of use for each release print, and is a cost-effective. Each release print film has one-third of a projection frame of 4, which results in a smaller projected image.

6 Claims, 3 Drawing Sheets



Value is automatically selected when the number of output pixels is more than twice the number of input pixels. The sharpening-factor value, ideally two, is multiplied by the deviation of each image element, e. g. pixel, from the average of its adjacent neighbors; this product is added to the level of the subject image element to form an adjusted level. Weighting or selection of neighbor values along particular axes allows for anisotropic resolution or anamorphic scaling.

of 9 5,768,482



Details Text Image HTML KWIC

44 US 5804809 A

45 US 5786581 A

46 US 5768482 A

47 US 5750976 A

US-PAT-NO: 5936755**DOCUMENT-IDENTIFIER:** US 5936755 A
See image for Certificate of Correction**TITLE:** Multi-beam scanning apparatus

----- KWIC -----

Brief Summary Text - BSTX (7):

In the multi-beam scanning apparatus disclosed in Japanese Application No. 58-68016, resolution is switched by providing a change the advance direction of the luminous flux in an optical system. In the multi-beam scanning apparatus disclosed in Japanese Laid-Open Patent Application No. 57-54950, resolution is switched by providing an afocal anamorphic zoom lens system forming magnification in a subscan direction, and changing the subscan direction on a scanned surface via said zoom lens system.

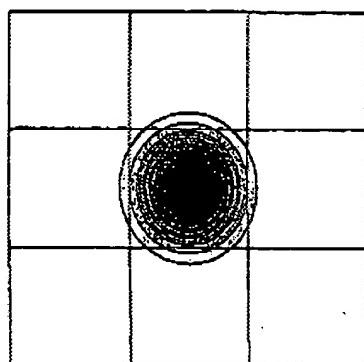
U.S. Patent Aug. 18, 1999 Sheet 3 of 8 **5,936,755**

FIG. 8(A)

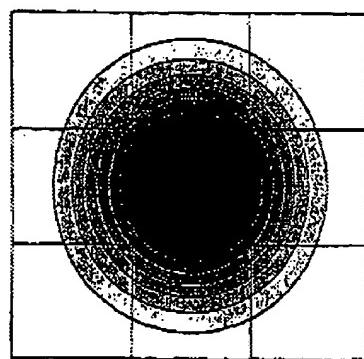


FIG. 8(B)

KWIC	
	Details
38	US 5975703 A
38	US 5956355 A
40	US 5936755 A
41	US 5818645 A

US-PAT-NO: 6181482

DOCUMENT-IDENTIFIER: US 6181482 B1

TITLE: Variable ratio anamorphic lens

----- KWIC -----

Brief Summary Text - BSTX (11):

The use of anamorphic optics to provide a variety of display aspect ratios is particularly beneficial for systems based on emerging digital display technologies because all available resolution of the recording and display media can be utilized. Further, some digital media use ratios other than academy ratio. For example, media with a 1280 by 1024 element resolution has a ratio of 1.25. Without anamorphic optics, a 4:3 ratio image could use only 963 elements vertically, while a 1.85:1 flat widescreen image would use only 692 vertical elements. By using anamorphic optics with an anamorphic ratio of about 1.07:1, a 4:3 ratio image can utilize the full 1024 element vertical resolution.

2
has the cost of the projection. Anamorphic lenses generally provide only a single ratio of compression. However, a different anamorphic structure can provide the appropriate anamorphic ratio for that is to be presented with an anamorphic

of 1.07:1 optics to provide a variety of aspect ratios for projection based on eye-safe digital display technologies having different ratios of the recording and display media. Further, some digital media use ratios other than the 1.25. For example, media with a 1280 by 1024 element resolution has a ratio of 1.25. Without anamorphic optics, a 4:3 ratio image could use only 963 elements vertically, while a 1.85:1 flat widescreen image would use only 692 vertical elements. By using anamorphic optics with an anamorphic ratio of about 1.07:1, a 4:3 ratio image can utilize the full 1024 element vertical resolution.

3
is desirable to use an anamorphic process to vary the aspect ratio of images. You can write this sentence over the header of higher images or higher over the header of a large number of consecutive pages. This is especially desirable for anamorphic optics. It is especially desirable for anamorphic optics. Additionally, there is a need for an anamorphic optics with a variable anamorphic ratio for use in projecting images with aspect ratios other than the aspect ratio of the image area on the recording medium.

SUMMARY OF THE INVENTION

An anamorphic system is provided to project an image. The anamorphic system provides a variable ratio. The anamorphic system includes a first lens group having negative power in a first direction, a second lens group having positive power in the same direction, and a third lens group having positive power in a second direction. The second lens group is located between the first lens group and the third lens group. The second lens group is located between the second lens group and the third lens group. The second lens group has a fixed distance from the third lens group. The third lens group has a variable power in a second direction substantially perpendicular to the direction.

P DESCRIPTION OF THE DRAWINGS

FIG. 1 shows a schematic view of a lens assembly including the lens structures of the present invention.

FIG. 2 shows a perspective view of the lens elements of various positions for the movable lens group.

FIG. 3 shows a perspective view of the lens elements in the embodiment of the present invention.

FIG. 4 shows a perspective view of the lens elements of the embodiment of the present invention.

FIG. 5A-5C show a plan view of the lens elements of FIG. 4 with various positions for the movable lens group.

FIG. 6 shows a relationship between the position of the movable lens group and the anamorphic ratio.

FIG. 7A-7C show a plan view of a solid embodiment of the lens embodiment with various positions for the movable lens group and movable lens elements.

FIG. 8A-8C show a plan view of the MTF for the lens embodiment shown in FIGS. 5A-5C.

	Details	Text	Image	HTML	KWIC
30	US 6243156 B1				
31	US 6213606 B1				
32	US 6181482 B1				
33	US 6160826 A				

US-PAT-NO: 6549215

DOCUMENT-IDENTIFIER: US 6549215 B2

TITLE: System and method for displaying images using video

----- KWIC -----

Detailed Description Text - DETX (56):

Referring now to FIG. 19, foveal and anamorphic video are combined into a single image. The low and high resolution images are combined into a single image as described above. The high resolution image in region 452 is combined with the low resolution regions 454, 456 in the horizontal dimension, using foveal video and also at a 1.1 times scale in both the horizontal and vertical dimensions, using anamorphic video. To combine this high resolution region 452 with the low resolution regions 454, 456 in the horizontal dimension, the edges 458, 460 of the high resolution region are scaled up by 1.1 times. The low resolution image information between the edges 458, 460 is displayed at same scale as the high resolution region 452. The information in the low resolution regions 464, 466 that is outside the high resolution region 452 is displayed using either abrupt or graduated anamorphic video.

Details Text Image HTML KWIC

17	US 6585378 B2	
18	US 6574050 B1	
19	US 6549215 B2	
20	US 6520643 B1	

